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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,303	01/13/2004	Shaw Wei Lee	NSC1P293/P05803	4504

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EXAMINER

THAI, LUAN C

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

Office Action Summary	Application No. 10/757,303	Applicant(s) LEE ET AL.	
	Examiner Luan Thai	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-20 is/are rejected.
- 7) ☐ Claim(s) 9 and 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/09/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claims 11-12 and 15 are objected to because of the following informalities:

In claims 11 and 12, line 2, the recitation "*the thickness or the wafer*" should be changed to --the thickness of the wafer--.

In claim 15, "*a depth of .00 microns or less*" is not understood.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4, 6, 11-12, and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Jin et al. (6,121,118).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1, 4, 6, 11-12, and 16-20, Jin et al. (see specifically figures 5-14) disclose a method, comprising: forming trenches (218) to have a depth approximately

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50% of the thickness of the wafer (Col. 3, lines 30+) by using a saw (220) partially cutting along the scribe lines (214) on a semiconductor wafer (212), positioning the wafer on a resilient pad (312), applying a mechanical pressure to the semiconductor wafer by using a roller (320) to break individual die (215) on the wafer (Col. 3, lines 50-67 and Col. 4, lines 1-65).

4. Claims 1-3, 5, 11-12, and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Yung et al. (6,075,280).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-3, 5, 11-12, and 16-20, Yung et al. (see specifically figures 1-3) disclose a method, comprising: forming trenches (140) by chemical wet etch along the scribe lines (120) on a semiconductor wafer (100) (Col. 4, lines 60+), wherein a depth of the trenches, as shown in figure 3, is approximately 50% of the thickness of the wafer (100), positioning the wafer on a resilient pad (Col. 5, lines 13-17), applying a mechanical pressure to the semiconductor wafer by using a roller (Col. 5, line 16) to break individual die (110) on the wafer, wherein forming the trenches along the scribe lines comprises applying a photo resist layer (115) over the active surface of the wafer (100); patterning the photo resist layer to form open regions running the length of the scribe lines on the wafer (100); and etching the wafer to form the trenches (140) in the wafer as defined by the open regions.

5. Claims 1, 4, 7-8, 10, and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa et al. (6,583,032).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1, 4, 7-8, 10, and 16-20, Ishikawa et al. (see specifically figures 1-3) disclose a method, comprising: back-grinding a wafer to reduce its thickness (Col. 2, lines 46+), forming trenches along the scribe lines on the semiconductor wafer (Col. 5, lines 20+), positioning the wafer on a resilient pad (46) with a ring (44) configured to substantially fit around the circumference of the wafer (Col. 4, lines 6+), using a roller (50) to apply a mechanical pressure onto the back of the semiconductor wafer (Col. 4, line 26+) to break individual die on the wafer.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al. (6,121,118) and Yung et al. (6,075,280) separately.

Regarding claims 13-15, each of Jin et al. and Yung et al. discloses the claimed invention as detailed above except for specifying the range of the depth of the trenches (e.g., 300 microns or less, as in claim 13; 200 microns or less, as in claim 14; and .00 microns or less, as in claim 15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the trenches having a depth in the claimed range because the

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depths of the trench is an art recognized variable of importance which is subject to routine experimentation and optimization.

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising there from. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical.

Allowable Subject Matter

8. Claims 9 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art taken either singly or in combination fails to anticipate or fairly suggest: *the pressure mechanism being configured to apply pressure in a circular motion on the wafer*, as claimed in claims 9 and 21, especially when these limitations are considered within the specific combination claimed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is 571-272-1935. The examiner can normally be reached on 6:30 AM - 5:00 PM, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bradley W. Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Luan Thai', with a stylized flourish extending to the right.

Luan Thai

Primary Examiner

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February 21, 2005